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Benchmarks as Guideposts

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Topic: National Math Panel: Critical Foundations for Algebra
Practice: Mathematics Preparation for Algebra

Highlights

- Importance of streamlining the mathematics curriculum
- The need to focus on student mastery of the foundational concepts and skills
- Explanation of the Panel's benchmarks
- Discussion of the Panel's development of the benchmarks
- How the benchmarks can be used to guide the creation of standards, frameworks, and assessments
- The need to interpret the benchmarks flexibly
- How the benchmarks can inform curriculum and instruction

About the Interviewee

Dr. Francis (Skip) Fennell is a member of the National Mathematics Advisory Panel, Chair of the Conceptual Knowledge and Skills Task Group, and member of the National Survey of Algebra I Teachers Subcommittee and Assessment Task Group. Fennell is a mathematics educator and has experience as a classroom teacher, a principal, and a supervisor of instruction. He is a Professor of Education at McDaniel College in Westminster, MD and the immediate Past

President of the National Council of Teachers of Mathematics (NCTM). Widely published in professional journals and textbooks related to elementary and middle-grade mathematics education, Dr. Fennell has also authored chapters in yearbooks and resource books published by the National Council of Teachers of Mathematics. In addition, he has played key leadership roles with NCTM, the Research Council for Mathematics Learning, the Mathematical Sciences Education Board, the National Science Foundation, the Maryland Mathematics Commission, the United States National Commission for Mathematics Instruction, and the Association for Mathematics Teacher Educators.

Dr. Fennell has received numerous honors and awards, including Maryland's Outstanding Mathematics Educator (1990), McDaniel College's Professor of the Year (1997), the Glenn Gilbert National Leadership Award from the National Council of Supervisors of Mathematics, and the CASE - Carnegie Foundation Professor of the Year - Maryland (1997). He has also been the principal investigator on grants from the National Science Foundation, the U.S. Department of Education, the Maryland Higher Education Commission, and the ExxonMobil Foundation.

Full Transcript

My name is Francis (Skip) Fennell. I am Professor of Education at McDaniel College in Westminster, Maryland. I served as a member of the National Mathematics Advisory Panel.

One of the key messages, I think, of the National Mathematics Advisory Panel report is this notion of streamlining the curriculum, and let me tell you what that means. Here we are in a culture where our local control is king; 50 states, all of them have their own state mathematics curriculum. If you are a fourth grade teacher today, in some states, that means you are responsible for over 100 mathematics objectives for your class. Oh, my goodness, good luck to you! There is no way you can give all 100 of those objectives equal treatment. And by implication, because it's an objective, nobody says to you to spend more time on this than that. That's really what framed a lot of our report. That's what helped us frame the critical foundations; that's what helped us decide on having the benchmarks. We need to have fewer topics, and those fewer topics must be the must-haves, must be the emphasis topics. Among the critical foundations we then laid benchmarks out. So, trying to send the message that among all the things you might do, make sure you do these particular areas particularly well.

As the Panel thought about—How can we send a signal, how can we send some message to a larger community about guideposts for these critical foundations? It certainly reviewed the National Council of Teachers of Mathematics' Focal Points. It certainly reviewed many of the state curriculum frameworks in this country. It certainly reviewed curriculum frameworks from Singapore, from Japan, from Korea, from Flemish Belgium; that was done in a very careful way to sort of signal that these are appropriate benchmarks if we think about ensuring access to algebra at the middle school level, however we define algebra. And yet

they're also paced to the extent where it allows teachers to dig deeper. By that I mean, let's make sure they know addition and subtraction well by the end of third grade as opposed to rushing toward access to algorithms without kids having experience understanding how algorithms work. And we want to be very careful by stating, and I am stating that here now, that not every child is going to get there. These are guideposts, and so it depends on the progress of skills of the child, depends on the ability of the teacher to move forward with this, but these are things that were carefully researched in terms of approximate placement for these various grade levels.

By the end of grade 5, students ought to be proficient with multiplication, division of whole numbers. Now, that's not everything, but we are saying, "Here's the benchmark, shoot to that." All the stuff that allows for level of proficiency, all that are tied to that at grade 3, to this at grade 5, and so forth; they are interpreted flexibly to allow for differences and challenges that classroom teachers and school districts face. With the implementation of the No Child Left Behind legislation, it's absolutely imperative that teachers assist students in reaching proficiency in mathematics. Some students are going to take more time than others to getting there. Some students are coming from backgrounds where they haven't had the kind of experiences that we would like in terms of mathematics. That teacher is still responsible for that child. That teacher must pick up that child and/or those children and take them from that place to meet that level of proficiency. And so, as those challenges mount, we want to make sure that we, frankly, safeguard the classroom teacher and allow him or her the amount of time to do this well.

As I think about, from my perspective—What are the takeaways here? What can you as a classroom teacher think about this report? I would say, to think about the following. The critical foundations, and those benchmarks prior to algebra, are just that. They are benchmarks, they are guideposts, they are foundational for all students. And so as we think about mathematics for every child in your classroom, those are aspects of the curriculum that all students must have and, frankly, have at a deep level. To me, that's the nucleus of your work at particular grade levels, and then build around that. It's very important that nobody gets the impression that that's the entire curriculum. There are far too many students these days who talk about difficulties and challenges in mathematics. There is a popular book out now for middle grade kids called *Math Doesn't Suck*. We've got far too many kids using that and getting a ripple of laughter out of that, when math is important. This subject opens doors. How do we find ways to connect students every day with the mathematics they are learning? That's the challenge.